



SCIENCE ON BOARD

Charles Green (1734-1771) was apprenticed as an astronomer to James Bradley, Royal Astronomer. Green joined Cook's first Cook's first Voyage of circumnavigation in 1768, one of two official astronomers appointed by the Royal Society to observe the transit; the other was Cook himself, a capable observer in his own right.

Green was to receive 200 guineas from the Society for the appointment; Cook was to receive 100 guineas for his role in making the observations+. **The Society provided many instruments for the expedition, including two reflector telescopes built by James Short, two clocks and an astronomical quadrant; these were supplemented by a telescope in the possession of Daniel Solander and another provided by the Navy.**

The expedition arrived at Tahiti, the chosen site for the observation of the transit, on 11 April 1769. Of paramount importance for Green was the calculation of an accurate position of the location, which he calculated using the lunar distance method and by observation of the moons of Jupiter. The day of the transit, June 3, was a clear day and the transit was visible in its entirety.

Regrettably, Green contracted an illness and died before the return voyage. Cook noted (somewhat coldly) *'In the night Died Mr Charls Green who was sent out by the Royal Society to Observe the Transit of Venus; he had long been in a bad state of hiltth which he took no care to repair but on the contrary lived in such a manner as greatly promoted the disorders he had got had long upon him, this brought on the Flux which put a period to his life.'*

+ A guinea was worth £1.1s (one pound and one shilling) = and Stg90 in 2017



James Short (1710-1768) Scottish born, his skill in polishing metal specula (mirrors) was largely self-taught. In 1738 he moved to London, where he could reach a larger market. He was able to concentrate on polishing the mirrors of his instruments, while buying in the rest of the brasswork. A prominent clockmaker, he also produced over 1300 reflecting telescopes, sold to observatories and customers all over the world.

Longitude fixes the location of a place on Earth east or west of a north-south line called the Prime Meridian. It is given as an angular measurement that ranges from 0° at the prime meridian to +180° eastward and -180° westward.

John Harrison (1693-1776) was a self-educated English carpenter and clockmaker who invented the **marine chronometer**, a long sought-after device for solving the problem of calculating longitude while at sea.

The government offered the outstanding prize money of Stg20,000 to anyone who could resolve the problem. Spanning 31 years of persistent experimentation and testing that revolutionized naval (and later aerial) navigation, Harrison's solution greatly increased the safety of long-distance sea travel – though he didn't win the money!

A self taught, rough tongued Yorkshireman, class certainly played a part in Harrison's not being accorded the scientific respect and financial support his discovery warranted, until very late in his life.

Knowledge of a ship's east-west position was essential when approaching land. After a long voyage, cumulative errors in dead reckoning frequently led to shipwrecks and a great loss of life. Avoiding such disasters became vital in Harrison's lifetime, in an era when trade and navigation were increasing dramatically around the world.

